

General Ecology – Botany/Zoology/Forest & Wildlife Ecology 460

Fall 2015

Tues./Thurs., 2:30 – 3:45 pm, 145 Birge Hall

Updated: 9/2/15

Instructor: Dr. Damschen is the primary faculty member responsible for the overall organization of the course and all lectures. She holds regular office hours that allow you to meet with her in person and ask questions. You should contact her if you have questions about lecture material, lecture assignments, exams, your overall performance in the course, or want general advice on ecological careers. Questions about lab/discussion assignments, logistics, or grades should be directed to your lab/discussion instructor.

Dr. Ellen Damschen, 451 Birge Hall

Office: 608-262-2636, E-mail: damschen@wisc.edu (preferred)

Office Hours: 3:45-4:15pm (after class) on Tuesdays *and* Thursdays or by appointment. There will be no office hours on Oct. 6-8, nor on exam days.

Course Coordinator: The Course Coordinator, Tricia Fry, is responsible for course logistics including registration, wait lists, section changes and can answer general questions about the course, textbooks, course packet, accessing course materials, etc. She also is the instructor for two of the lab/discussion sections (see below).

Tricia Fry, Botany, Tues. and Thur. Lab/Discussions

Office: 238 Birge Hall, E-mail: tfry@wisc.edu

Office Hours: 9:30 -10:30 am Wednesday or by appointment

Lab and Discussion Instructors: The Course Coordinator and two Teaching Assistants assist with every aspect of the course and teaching two lab/discussion sections each. They also hold regular office hours. You should go to them with questions about the labs, discussions, lab assignments, your semester research project, in addition to review of lecture material and problem sets. They also can provide advice on the course or ecology in general. Teaching Assistant contact information is below:

Kristin Michels, Botany, Monday sections

Office: 338 Birge Hall

E-mail: kkmichels@wisc.edu (preferred)

Office Hours: Fri. 12-1pm, 339 Birge, or by appt.

Quinn Sorenson, Zoology, Wednesday Sections

Office: 444 Birge Hall

E-mail: qsorenson@wisc.edu (preferred)

Office Hours: Tues. 1-2pm, 444 Birge, or by appt.

Course Objectives: The principle objectives of this course are two-fold: to examine in lecture biological processes at the level of whole organisms and higher (populations, communities, and ecosystems), and to survey the tools and thinking processes used by ecologists to conduct ecological studies (lab/discussion). By the end of the course, students should be able to answer the following key questions in ecology:

1. Why are some species common while others are rare?
2. What limits the local, continental, and global distribution of species?
3. Why are there so many different types of species on earth?
4. How do organisms *adapt* (in an evolutionary context) to their environment?
5. How are ecological systems (communities or ecosystems) structured and regulated?
6. What roles do natural ecosystems play in the maintenance of human populations?
7. What roles do humans play in the functioning of natural ecosystems?
8. How does an ecologist approach answering a particular ecological question with field work, experiments, or models?

Teaching Style: Lecture periods will include both traditional lectures and interactions with the class. Students are welcomed to actively participate in lectures. You will find that lecture PowerPoint slides contain mostly pictures, figures, and examples and that concepts are typically presented verbally and by using the chalkboard or document camera. In addition, small break-out groups will often be used to discuss concepts, issues, and solve conceptual and quantitative problems. The carbonless notebooks (see below) will be used both inside and outside of class to be able to facilitate many of these types of interactions and activities. The laboratory and discussion periods will be very active and will include hands-on data collection, species identification, data analysis, and writing. You should be prepared to be actively involved with this course.

Textbooks (required):

Ricklefs, R.E., and R. Relyea. 2015. *The Economy of Nature*, 7th Edition. W.H. Freeman and Company, New York, NY.

Karban, R., M. Huntzinger, and I.S. Pearse. 2014. *How to Do Ecology: A Concise Handbook*, 2nd Edition. Princeton University Press, Princeton, NJ.

These books are required and you do need the newest editions as past versions are substantially different. You will be using these textbooks a lot, so we recommend purchasing your own copy. However, if need be, we do have copies of the textbook on reserve at College (in Helen C. White) and Steenbock libraries, so you can read the textbook there but cannot check it out.

Carbonless Notebook (required): You are required to have a carbonless spiral-bound 50-sheet set notebook for lecture exercises (it doesn't matter if they are blank, gridded, or lined pages – all will work). It must contain 8.5x11" pages that can tear out. An appropriate notebook is National Brand's "Laboratory Notebook" (gray cover) for ~\$15 at the University Bookstore. You may use carbonless notebooks from previous classes as long as they are the correct size and the pages tear out. You can bring yours to class if you want to see if yours will work.

Course Packet (required): The hard copy course packet includes a Discussion Reader and a Laboratory Manual, each with its own table of contents and separate page numbering. The discussion reader contains primary scientific papers assigned for discussion, read these by the date they are assigned in course schedules and be prepared to discuss these papers in class. The lab manual section has information on lab/discussion goals and policies, the lab exercises, information about your ecology project, and appendices with supplemental information for lab and discussion. You are expected to have read all relevant materials and to bring at least the relevant reader and lab manual pages to each lab/discussion meeting. The lab manual and reader are available from ASM StudentPrint (262-6216, Rm 3301, 3rd floor, in 333 East Campus Mall, across from Vilas Hall). Hours in-semester are Monday-Friday 9:30 am - 6:30 pm. Check their website to make sure the packets are ready, <http://www.stuprint.org/testing/#course-readers>. NOTE: ASM Student Print will have packets ready for the first 90% of the students, but will then print only on demand for the last 10%. If you are one of the last 10% of students in the course to get your course packet, call before going to pick it up and be prepared to pay in advance.

Calculator (required): You will need a one- or two-line, non-programmable, non-graphing scientific calculator (cost usually \$20 or less). For exams, you must have this type of calculator and no exceptions will be granted; we will check to be sure appropriate calculators are being used (no internet access, text entry, or large memory allowed). Be sure to buy a scientific calculator that includes logarithms (including a natural log (ln) key), roots, and exponents (including an e^x key) in addition to basic math functions. The campus Digital Outpost carries about a dozen different models; all campus area bookstores carry at least a

few models, and they are of course also available from (among other places), Target, Walmart, Walgreens, Comp USA, Staples, RadioShack, OfficeMax, Office Depot, and Amazon. An example of an acceptable calculator is the Texas Instruments TI-30X IIS, although any brand with a similar level of functionality is acceptable.

Websites:

General Ecology 460 websites – The Learn @UW course website <https://learnuw.wisc.edu/> is the place to go for day-to-day course information. It will contain the latest revisions of lecture and lab schedules, student lecture notes, homework assignments, keys to exams, plus information and documents for discussion and lab. Answers to frequently asked questions can also be found here. That website is updated regularly. Remember only enrolled students have access this site and you must use your UW-Madison NetID and password to log in. The public class web site can be accessed by clicking on “General Ecology” after the course number (<http://www.botany.wisc.edu/botanycourses.htm>). This site has general information only and is not kept current. It should not be used for day-to-day course information.

Textbook website – The text also has an accompanying website called Launchpad that includes the eBook, student quizzes, and other information. Access is not free, so we do *not* use Launchpad for this course. However, the link is at <http://www.macmillanhighered.com/launchpad/ricklefs7e/796920> if you would like to purchase access on your own. You do not need this website to do well in this course.

Lecture Expectations: You are expected to attend all lectures. Students are responsible for all material in lecture whether or not they attend. Course instructors cannot catch students up on lecture material if they miss class. Out of respect for everyone in the class, please turn off cell phones and participate fully in class. Laptops or other electronic devices may be used to take lecture notes. However, if the use of a laptop or electronic device distracts from the course in any way (e.g. internet surfing unrelated to class, checking e-mail, etc.), the instructors reserve the right to ask students to shut down the device or to leave the classroom.

Lecture Slides: Lecture slides will be uploaded to Learn@UW before each lecture. Additional materials such as figures or problem sets may also be posted following lecture. Please be aware that Dr. Damschen reserves the right to make changes to lectures that can lead to some inconsistencies between posted lecture slides and lectures themselves. In addition, you will see that slides are not heavy on text, so they cannot replace getting the information covered in class. You are responsible for the material covered in lecture.

Study Guides: Dr. Damschen will post a study guide with learning objectives, key concepts, and key terms to Learn@UW at the end of each week. Use these to help review the week’s materials, think about discussion for the coming week, and build your own study guide for exams. Students in past classes have found these very helpful. Exam questions are based on the material in the Study Guides.

Lecture Assignments: You will be given short lecture assignments on a regular basis (approximately weekly), which will be announced during lecture and may take place in or outside of class. You will be asked to think about a particular problem or question and provide your best thoughtful answer. The goal of these assignments is to demonstrate how you think and in many cases there will not be a “right” answer. These assignments will be graded out of 2 points (2 = well thought-out and articulated answer, 1 = completed the assignment, but answer could be better thought out or articulated, 0 = did not complete the assignment). The top 80% of these assignments will be taken as your final lecture assignment grade. There are no make-up assignments allowed, whether unexcused or excused (but note that the worst 20% of scores will be dropped regardless).

Problem Sets: Practice problem sets will be posted throughout the semester on Learn@UW. These problem sets will be announced in lecture and will *not* be graded (i.e., you do not turn them in). The keys for the problem sets will be posted on Learn@UW shortly after the problem set is assigned. You should work through the problem sets without looking at the key, check your answers, and talk with an instructor about any remaining questions you have. Similar types of problems will appear on exams. Be sure to complete these problem sets as they are assigned, and well in advance of exams so that you allow time for attending instructor office hours to go over questions as needed.

Lecture Examinations: There will be four non-cumulative exams, which will all be written in the same format (described below). Exams will begin promptly at the start of the period and will consist of multiple choice, matching, short answer, and short essay questions. You will be given **60 minutes** to complete your exam (i.e., class will end early on exam days). When exams are given, desks must be entirely empty with the exception of pencils, erasers, and a calculator if it is needed for that exam. Please put all of your belongings below your desk on exam days. Food and drink are not allowed. Please do not wear hats with brims on exam days (baseball hats can be turned backwards). Each exam will cover material from lecture, assigned discussion readings, lecture assignments, and other course assignments, and will emphasize material covered in lecture and highlighted on problem sets. The Study Guides are designed to help you focus on the material that will be covered in the exam and help you practice responses.

Lecture Exams – The three highest scores of the four lecture exams will count toward your final grade. If you miss one in-class lecture exam for any reason, excused or unexcused, that will count as the dropped exam. ***There are no make-up lecture exams.*** Note that ***the fourth exam will be held during the final exam period***, but will not be cumulative. There will also be no regrading of the fourth exam. For the fourth exam that is given during final exam period, university policy specifies that you may request an alternate time if you have three or more final exams scheduled within a 24-hour period. ***However, you must request an alternate final exam time/date within the first two weeks of class.*** It is easy to overlook this last requirement buried in the fine print, so pay attention to this requirement for other courses as well as ours. Remember that university policy expressly forbids instructors to allow students to take exams scheduled for the final exam period early just so they can leave campus early. That said, if you want to count the fourth exam as your dropped exam score, this is your choice.

Exam Regrading Policies (note that laboratory assignments and the fourth exam will not be regraded, only the first three exams): The course instructors will attempt to grade every exam fairly and accurately. If you disagree with the way your answer on an exam was graded, you must submit an official written regrade request following the Exam Regrading Guidelines on Learn@UW. Exam regrade requests that do not follow these guidelines will not be considered. If you submit any exam question for a regrade, then we reserve the right to regrade the entire exam. No questions about the exam will be accepted until 24 hours after it is returned and all regrade requests must be submitted to Dr. Damschen's office within 24-72 hours from the time of the original in-class exam (leave under door if she is not there). You must submit your original exam with a printed regrade request AND a copy of the regrade request should be emailed to Tricia, tfry@wisc.edu. No regrade requests will be accepted for the final exam. Please note that simple clerical errors (e.g., the page totals don't sum to the total listed) do not need to be submitted using an official regrade request and should be dealt with immediately. You should see a course instructor right away and no later than 72 hours after the exam if a clerical error occurs.

Lecture Discretionary Grade: The instructors will determine the lecture discretionary grade for each student based on: 1) lecture assignments (see above) and 2) lecture participation. Lecture participation grades will be discretionary and instructors will give high grades to students who participate regularly, are well prepared, and have positive attitudes.

Laboratory/Discussion Expectations: The lab manual contains details related to our expectations for lab and discussion and a detailed summary of how your lab grade will be calculated. The first week of lab we will go over these details and important dates including the semester research project that you will be conducting. It is important to note that attendance each week is mandatory and Instructors will take attendance; your grade will be penalized for not attending lab/discussion and you will be held accountable for all material covered in labs and discussions. Laboratory/discussion policies are explained in the laboratory manual. Laboratory and discussion sections are linked and can't be split between days.

Laboratory/discussion sections meet starting the week of September 14. We will meet in Birge 101. Please see the schedule for meeting locations each week. Read the discussion paper, the lab cover sheet and assigned lab exercise, and complete the pre-lab assignment(s) before coming to your laboratory meeting.

If you have a conflict with a particular lab/discussion day, contact your lab instructor at least 2 weeks BEFORE the conflict. With permission, you may be able to attend another lab day. For emergencies, contact the appropriate persons as soon as possible. Do not assume you can attend a different lab/discussion without permission.

Graduate Student Expectations: If you are a graduate student taking this course, you will have additional expectations for this course as per university guidelines. For this course, graduate students will present on the contributions of an influential ecologist in lecture. Instructions:

- Select an ecologist that has influenced you and secure approval via email (and in-person discussion as needed) that this is an appropriate individual to research with your lab instructor, Tricia Fry, and Dr. Damschen. In your email, also include two possible lecture dates/topics for your presentation that match the expertise of the ecologist you have chosen. Dr. Damschen will give you approval to give your presentation on one of these dates. Locate as many available sources as possible (including obituaries, *Curriculum Vitae*, biographies, organizational websites, award speeches, books, journal articles, etc.). Trace the evolution of this ecologist's *ideas* as evidenced by publications, employment, memberships, service activities, awards, etc. Assess their *salient contribution(s) to the field*; be sure to use critical analyses such as book reviews as well as the author's own words.
- **24 hours before your presentation**, turn-in via email to your lab instructor, Tricia Fry, and Dr. Damschen: A *one page, two-sided handout* that including the ecologist's name and life-dates. Your handout should convey the tone/nature of his/her work, a selected bibliography of important works, and a photo/image (if available). Don't forget to include the ecologist's name and life dates. This will be handed out to students in class. The course instructors will make the copies for you.
- Prepare a 10-minute presentation conveying this ecologist's importance and contributions. You will have an additional 5 minutes to answer questions from the class (total time will be 15 minutes).
- Like all assignments for this class, your handout must be **fully referenced**. You may use any consistent citation and referencing format (with documentation); unless you have a preferred alternative, I recommend using the format of the journal *Ecology*.

Assignments and Due Dates: The lecture and lab/discussion schedules include important due dates for all assignments. All assignments are due **at the start of class** (either lecture or lab/discussion) on the days listed on the schedules. To be fair to all students in the class and to ensure instructors have enough time to grade assignments, **no late assignments will be accepted**.

Course Grade Calculation:

Lecture Items	% of Total
Exams (3 of 4 exams – 15% for each exam)	45%
Discretionary Grade (lecture assignments and lecture participation)	7.5%
Lab and Discussion Items	
Discretionary Lab Grade includes participation, peer evaluations	7.5%
Lab Exercises 1-5	7.5%
Weekly Quizzes and Species Quizzes	7.5%
Proposal Presentation	5%
Final Presentation	7.5%
Final Report	12.5%
(Failure to attend/participate in lab can drop total lab grade by up to 5% for each lab missed)	
Grand Total	100%

Grades are recorded and aggregated through the semester as percentages (as per the above table), not as points. The following scale will be used to assign grades and may be lowered, but will not be raised. Note that grades for individuals assignments are weighted in this class (see percentages above). This means that some components “count more” than others. Also note that if you fail to complete an assignment, the highest grade you can get for the course is the percentage left without the missing item.

A: 93 - 100%, AB: 88 - 92%, B: 82 - 87%, BC: 78 - 81%, C: 70 - 77%, D: 60 - 69%, F: 0 - 59%

If the fourth exam is unable to be given because of extreme weather or other unexpected events that cause the university to close, grades will be determined from the first three exams. In other words, the fourth exam will be counted as the dropped exam and grades will be assigned based on work to date.

Academic Integrity and Ethics: Evidence of cheating or attempted cheating will be handled by the staff following published UW-Madison policies. A confirmed cheater will receive a failing grade for the course. The situation may be referred to the office of the Student Assistance and Judicial Affairs, and a Dean for further action. Please refer to the undergraduate student Academic Misconduct information on the UW-Madison website at: <http://students.wisc.edu/saja/misconduct/UWS14.html>.

Course e-mail lists: The course e-mail list should only be used by course instructors and/or with their permission. If you have an e-mail that you would like to send to the entire class or to your entire lab section, please communicate with the course instructors before doing so.

Disability Services: Students who are seeking disability information or support for a disability should contact the McBurney Center <http://www.mcburney.wisc.edu/information/mission.php> or 263-2741. The McBurney Center is responsible for approving and helping to arrange all accommodations for UW-Madison students. *If you require special accommodations for exams or other lecture activities, please see Dr. Damschen or Tricia Fry immediately so that these accommodations can be made well in advance of exam dates or other course deadlines.* Bring your McBurney documentation to support your request. Attending the field labs requires the physical ability to negotiate dirt paths and off-trail uneven ground through vegetation. We will do our best in-house to accommodate students with temporary physical disabilities. If your physical disability is long-term, we will need to confer with you and probably a McBurney Center representative before labs begin, to see what accommodations can be made.

Religious Observances Conflicts: Students who have a religious conflict with any course obligation or exam should notify Dr. Damschen *within the first two weeks of class* as to which date(s) they are requesting relief and to determine how course material should be addressed. According to UW-Madison policy, there is a reasonable limit on the total number of days claimed for religious absences by any one student, which can be discussed with Dr. Damschen when the request is made.

Disclaimer: The course instructors reserve the right to make modifications to this information throughout the semester. The newest version will be posted on Learn@UW. Refer to the “updated” date at the top of the syllabus to make sure you have downloaded the most recent version.

GENERAL ECOLOGY LECTURE SCHEDULE FALL 2015

Botany/Zoology/Forest & Wildlife Ecology 460

Lecture 2:30-3:45pm Tues., Thurs.; 145 Birge Hall

Text is *The Economy of Nature*. 7th edition. 2015. by Robert E. Ricklefs Jr. and Rick Relyea, Freeman & Co.

How to do Ecology: A Concise Handbook. 2nd Edition 2014. Karban, Huntingzinger, & Pearse

Updated: 9/2/2015 (check frequently for updates on Learn@UW)

Wk	Date	Lecture Topic	Ricklefs and Relyea	Lab and Discussion Readings	Lab Assignments
Section I: Introduction					
1	3 Sep (Th)	1: The field of ecology	Ch. 1	N/A	
Section II: Organisms and their environment					
2	8 Sep (Tu)	2: Species distributions I (niche, adaptations)	Ch. 11: 248-250, 253-254 (read first), Ch. 2: 34-43; Ch. 3: 58-80; Ch. 5: 114-129	N/A	
	10 Sep (Th)	3: Species distributions II (variability, dispersal, dormancy)	Ch. 4: 87-91, 95-103; Ch. 11: 255-256, 258-261		
3	15 Sep (Tu)	Species distributions III (biomes)	Ch. 6	How to do Ecology Intro, Ch. 1 & 2	
	17 Sep (Th)	Species distributions IV (human impacts)	Ch. 2: 52-53; Ch. 4: 108-109; Ch. 5: 133-134		
Section III: Populations, evolution, and behavior					
4	22 Sep (Tu)	6: Energy, resources, and ecosystems	Ch. 20	Slavik et al. 2004	Species Quiz 1
	24 Sep (Th)	<u>Midterm Exam 1</u>			
5	29 Sep (Tu)	7: Population ecology I (size, regulation, structure)	Ch. 12	How to do Ecology – Ch. 3, 4, 6	Lab Exercises 1 and 2 Species Quiz 2
	1 Oct (Th)	8: Population ecology II (regulation, structure, dynamics)	Ch. 13		
6	6 Oct (Tu)	9: Population ecology III (human population growth)	Ch. 12: 271-72	Crouse et al. 1987 How to do Ecology – Ch. 6	Lab Exercises 3 and 4
	8 Oct (Th)	10: Metapopulations	Ch. 11: pg. 265-266; Ch. 13: 309-312		
7	13 Oct (Tu)	11: Evolution, natural selection, population genetics	Ch. 7	Adams et al. 2013	Proposal Presentations
	15 Oct (Th)	12: Behavioral ecology	Ch. 9: 220-224; Ch. 10		
8	20 Oct (Tu)	<u>Midterm Exam 2</u>		Connell 1961	
Section IV: Species interactions and communities					
8	22 Oct (Th)	13: Consumer-resource interactions I	Ch. 14, Ch. 15		
9	27 Oct (Tu)	14: Consumer-resource interactions II, Competition I	Ch. 15, Ch. 16	No readings	
	29 Oct (Th)	15: Competition II	Ch. 16		
10	3 Nov (Tu)	16: Coevolution, mutualism, disease	Ch. 14: 336; Ch. 15; Ch. 17	Stenglein et al. 2015	
	5 Nov (Th)	17: Community ecology	Ch. 18, Ch. 22		
11	10 Nov (Tu)	18: Succession and disturbance	Ch. 19	Veldman et al. 2015	
	12 Nov (Th)	19: Community assembly, diversity, structure	Ch. 18, Ch. 22		
12	17 Nov (Tu)	20: Life history strategies	Ch. 8	Alstad and Damschen 2015	Species Quiz 3, Draft of Intro/Methods
	19 Nov (Th)	21: Landscape ecology, diversity at large scales	Ch. 22		
Section V: Human-induced change, conservation solutions, and restoration ecology					
13	24 Nov (Tu)	<u>Midterm Exam 3</u>		How to do Ecology – Ch. 8	
	26 Nov (Th)	THANKSGIVING BREAK – NO CLASS			
14	1 Dec (Tu)	22: Biodiversity and ecosystem services	Ch. 23	Harrison et. al 2015, Haddad et al. 2015	Lab Exercise 5 due via Drop Box by Friday, December 4 th
	3 Dec (Th)	23: Global change I (extinction risk, invasions, overexploitation)	Ch. 11: 267-268; Ch. 13: 305-308, 313-314; Ch. 17: 409-410; Ch. 18: 435-437; Ch. 23		
15	8 Dec (Tu)	24: Global Change II (habitat loss, fragmentation, reserve design)	Ch. 11: 261-263; Ch. 22: 521-526, 529-530, 537-538; Ch. 23	No readings	Final Reports and Presentations
	10 Dec (Th)	25: Global Change III (conservation planning)	Ch. 5: 133-134; Ch. 11: 250-253; Ch. 23		
16	15 Dec (Tu)	26: Land use history and restoration ecology	N/A	N/A	

4th Midterm Exam will be held during final exam time from 5:05 pm to 7:05 pm, Friday, December 18, 2015. Location will be assigned mid-semester.